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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/700,785 | 02/05/2001 | Youbun Ito | 07553.0018 | 8283 |

7590 08/28/2002

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EXAMINER

GOUDREAU, GEORGE A

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| ART UNIT | PAPER NUMBER |
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1763

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DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

| | | | |
|-----------------|-----------------|----------------|----------------------|
| Application No. | 09-700785 | Applicant(s) | Shimpishihara et al. |
| Examiner | George Gaudreau | Group Art Unit | 763 |

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Responsive to communication(s) filed on 2-01' (i.e., - papers # 1-5)

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

Claim(s) 1-9 is/are pending in the application.

Of the above claim(s) is/are withdrawn from consideration.

Claim(s) 1-9 is/are allowed.

Claim(s) 1-9 is/are rejected.

Claim(s) is/are objected to.

Claim(s) are subject to restriction or election requirement

Application Papers

The proposed drawing correction, filed on _____ is approved disapproved.

The drawing(s) filed on _____ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All Some* None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. _____.

Copies of the certified copies of the priority documents have been received
in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). 5 Interview Summary, PTO-413

Notice of Reference(s) Cited, PTO-892 Notice of Informal Patent Application, PTO-152

Notice of Draftsperson's Patent Drawing Review, PTO-948 Other _____

Office Action Summary

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15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371 of this title before the invention thereof by the applicant for patent.

16. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by

Yang et. al. (6,227,211).

Yang et. al. disclose a three step etching process for selectively etching a SAC in a SiO₂ layer down to an underlying Si₃N₄ etch stop layer using a patterned photo resist etch mask. The process is comprised of the following three steps:

-First, the SiO₂ layer is bulk etched in a plasma comprised of C₄F₈-CO-CH₂F₂;

-Second, the SiO₂ layer is selectively etched to an underlying Si₃N₄ layer using a plasma comprised of C₄F₈-CH₂F₂-C₂F₆-CO-O₂-Ar.; and

-Third, the SiO₂ layer is selectively over etched to the underlying Si₃N₄ layer in a plasma comprised of C₄F₈-CH₂F₂-CO.

This is discussed specifically in general in columns 4-8; and discussed in columns 1-12.

This is shown in figures 1-2.

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17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

19. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et. al. as applied in paragraph 16 above.

Yang et. al. as applied in paragraph 16 above fail to disclose the following aspects of applicant's claimed invention:

- the specific etch process parameters which are claimed by the applicant; and
- the specific usage of an inert gas diluent in each etching step

It would have been obvious to one skilled in the art to employ an inert gas diluent in each of the plasma etch steps in the process taught above based upon the following. The usage of an inert gas diluent as a carrier gas in a plasma etchant is conventional or at least well known in the

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plasma etching arts. (The examiner takes official notice in this regard.) Further, this simply provides a means for balancing a plasma etchant. Also, Yang et. al. teach that an inert gas such as Ar may be used to balance the second plasma etching step.

It would have been *prima facie* obvious to employ any of a variety of different process parameters in the plasma etching process taught above. These are all well known variables in the plasma etching art which are known to effect both the rate and quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation which would be indicative of a showing of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific process conditions which are claimed by the applicant based upon In re Aller as cited below.

“Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process conditions which are claimed by the applicant are results effective variables whose values are known to effect both the rate and the quality of the plasma etching process.

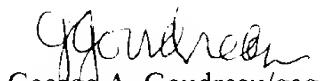
20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703) -308-1915. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Gregory Mills, can be reached on (703) -308-1633. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) -306-3186.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) -308-0661.


George A. Goudreau/gag

Primary Examiner

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